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03759955 **Image available**

DRIVING METHOD FOR SURFACE ACTUATOR

PUB. NO.: **04-125055** [*JP 4125055* A]

PUBLISHED: April 24, 1992 (19920424)

INVENTOR(s): EBIHARA DAIKI

JINBO YASUTAROU

APPLICANT(s): SHIN ETSU CHEM CO LTD [000206] (A Japanese Company or Corporation), JP (Japan)

EBIHARA DAIKI [000000] (An Individual), JP (Japan)

APPL. NO.: 02-243267 [JP 90243267]

FILED: September 13, 1990 (19900913)

INTL CLASS: [5] H02K-041/03

JAPIO CLASS: 43.1 (ELECTRIC POWER -- Generation); 25.2 (MACHINE TOOLS -- Cutting & Grinding); 29.4 (PRECISION INSTRUMENTS -- Business Machines)

JOURNAL: Section: E, Section No. 1249, Vol. 16, No. 385, Pg. 126,
August 17, 1992 (19920817)

ABSTRACT

PURPOSE: To enable movement at a short distance by directly moving a moving piece in the oblique (45 deg. and 135 deg. in the X axis) direction.

CONSTITUTION: A moving piece is composed of core coils 22A (A phase), 22B (B phase), 22C (C phase) and 22D (D phase). The magnetic poles of the B phase and C phase of the core coils 22A-22D are arranged separated by $P \cdot n$ plus or minus $P/4$ (P represents the pitches of magnetic poles disposed in a latticed shape of a stator and (n) a positive integer) in the X axis and Y-axis directions respectively to the magnetic pole of A phase, and D phase is disposed separated by $P \cdot n$ plus or minus $P/4$ respectively in the X axis and Y axis directions to A phase. When B phase is excited, the moving piece 20 is shifted in the X axis direction only by $P/4$. When C phase is excited, the moving piece 20 is moved in the Y axis direction only by $P/4$. The

moving piece 20 is shifted by approximately one third of an oblique travel at an angle of 45 deg. in the X direction from the position of A-phase excitation by ABC phase simultaneous excitation. The moving piece is moved forward by approximately one third further in the same direction by BCD phase simultaneous excitation, and lastly the moving piece is located at a final position by D phase excitation.

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03515847 **Image available**
TWO-DIMENSIONAL MOTOR TYPE STAGE DEVICE

PUB. NO.: **03-178747** [*JP 3178747* A]
PUBLISHED: August 02, 1991 (19910802)
INVENTOR(s): TOMITA YOSHIYUKI
SATO FUMIAKI
ITO KAZUHIRO
APPLICANT(s): SUMITOMO HEAVY IND LTD [000210] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 01-317013 [JP 89317013]
FILED: December 06, 1989 (19891206)
INTL CLASS: [5] B23Q-005/28; B23Q-001/18; H02K-041/03
JAPIO CLASS: 25.2 (MACHINE TOOLS -- Cutting & Grinding); 43.1 (ELECTRIC POWER -- Generation)
JAPIO KEYWORD: R094 (ELECTRIC POWER -- Linear Motors)
JOURNAL: Section: M, Section No. 1174, Vol. 15, No. 427, Pg. 10, October 30, 1991 (19911030)

ABSTRACT

PURPOSE: To obtain an extremely high precision by arranging a number of permanent magnets into the form of a matrix on the surface of a yoke while alternately inverting their polarities, and supporting a stage on the upper surface thereof by means of an air bearing, and moving the stage by means of a Lorentz force generated by coil currents.

CONSTITUTION: On the surface of a yoke 11 a number of permanent magnets 12 are arranged into the form of a matrix while their polarities are

alternately inverted, and the coils 14a to 14f of a stage 13 are supported by an air bearing, etc., and disposed in a position where lines of magnetic force from the number of permanent magnets 12 are kept roughly perpendicular to the yoke 11. When currents are made to pass through the coils 14a to 14f Lorentz forces acting on the coils act roughly perpendicular to the coils and the lines of magnetic force, whereby the stage 13 is moved to a desired position on the surface of the yoke 11 and positioned. The two-dimensional stage of high precision is thus obtained.

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02183261 **Image available**
FLAT MOTOR

PUB. NO.: **62-100161 A]**
PUBLISHED: May 09, 1987 (19870509)
INVENTOR(s): EBIHARA DAIKI
SHINPO KIYOUTAROU
APPLICANT(s): SHIN ETSU CHEM CO LTD [000206] (A Japanese Company or Corporation), JP (Japan)
EBIHARA DAIKI [000000] (An Individual), JP (Japan)
APPL. NO.: 60-237116 [JP 85237116]
FILED: October 23, 1985 (19851023)
INTL CLASS: [4] H02K-041/02
JAPIO CLASS: 43.1 (ELECTRIC POWER -- Generation)
JOURNAL: Section: E, Section No. 546, Vol. 11, No. 306, Pg. 158,
October 06, 1987 (19871006)

ABSTRACT

PURPOSE: To miniaturize and simplify a device, and to simplify maintenance work by utilizing the interaction of a permanent magnet and an electromagnet and moving a body in the extent of a two-dimensional plane.

CONSTITUTION: Electromagnets 11 at each position in a stator 10 are magnetized at every other electromagnet, and the electromagnets 11 on lines except the nearest line also suck and hold a mover 13 and make it rest. When changing the direction of polarity of the electromagnets excited, the mover 13 is shifted only by an $xX1/2$ step in the direction of the arrow X

and rests in the same manner as the electromagnets on the nearest line. The mover 13 is transferred only by a $yX1/2$ step in the direction of the arrow Y by altering the electromagnets 11 even in movement in the direction of the arrow Y. Accordingly, the mover 13 can be locomoted and made to rest at the steps of $x/2$ in breadth and $y/2$ in length on the surface of the stator 10 by repeating the operation of movement in said X and Y directions.

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03193346 **Image available**
DIRECT DRIVE SURFACE ACTUATOR

PUB. NO.: **02-168846** [*JP 2168846* A]
PUBLISHED: June 28, 1990 (19900628)
INVENTOR(s): EBIHARA DAIKI
SHINPO KIYOUTAROU
APPLICANT(s): SHIN ETSU CHEM CO LTD [000206] (A Japanese Company or Corporation), JP (Japan)
EBIHARA DAIKI [000000] (An Individual), JP (Japan)
APPL. NO.: 63-319886 [JP 88319886]
FILED: December 19, 1988 (19881219)
INTL CLASS: [5] H02K-041/03
JAPIO CLASS: 43.1 (ELECTRIC POWER -- Generation); 29.4 (PRECISION INSTRUMENTS -- Business Machines)
JAPIO KEYWORD:R094 (ELECTRIC POWER -- Linear Motors)
JOURNAL: Section: E, Section No. 979, Vol. 14, No. 433, Pg. 118,
September 17, 1990 (19900917)

ABSTRACT

PURPOSE: To enable direct driving of a mover in two perpendicularly crossing directions by providing a stator to be arranged with a plurality of permanent magnets in grid and the mover having four-phase core coils, and arranging the magnetic poles of three-phases at specific distances in the direction of X and Y axes with respect to the remaining phase.

CONSTITUTION: A stator 10 has a plurality of permanent magnets and guide rails 30, 40 while a mover has first and second core coil groups 22A-D(A-D phase), 24A-D(A-D phase), where the magnetic poles of B, C and D phases in

the first and second groups are separated in the directions of X and Y axes by $p.n$ plus or minus $p/4p$ from the magnetic pole of phase A. Motion in the direction of X-axis is activated through excitation of phases A and B or phases C and D while motion in the direction of Y-axis is activated through excitation of phases A and C or B and D. By such arrangement, the mover can be driven directly in two perpendicularly crossing directions.

Hi Dorne, I found abstracts for everything. However, most of the abstracts were in the Japio database. Derwent had English abstracts for only two of the patents - JP 7-131966 and JP 7-60581. I am forwarding the Derwent assignment/family records for all of the patents along with the Japio English language abstracts. If you have any questions please let me know. - Javii